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Sent: Monday, May 10, 2010 12:31 PM
To: 'Bill Crouch'; 'Tony Langley'; 'Gordon Arent'
Subject: Preliminary RAIs for Watts Bar Unit 2 FSAR Sections 6.2.4 and 6.2.6

1. Figure 6.2.4-13, "Type XV, Personnel Access", appears to show the interior door within the shield building wall with the airlock doors opening outward, away from primary containment. FSAR Section 6.2.4.2.3, "Penetration Design", states that "A special hold-down device is provided to secure the inner door in a sealed position during leak rate testing of the space between the doors." This would suggest that the doors in each primary containment airlock open inward. Clarify the orientation of the personnel access airlock doors.
2. FSAR Section 6.2.4.2.3, "Penetration Design", states that "The ice blowing line penetration has a blind flange with double O-rings installed on the outside of the containment as shown in Figure 6.2.4-16. Sealing between the outside and the annulus penetration through the shield is provided by a blind flange fitted with a gasket installed on the inside and outside of the Shield Building penetration. FSAR Section 6.2.4.3.1, "Possible Leakage Paths", includes in the Type B leakage paths from containment to the annulus the ice blowing line O-ring and blind flange through line leak and refers to Figures 6.2.4-16 and 6.2.4-23. Figure 6.2.4-16, "Type XVIII, Ice Blowing Line", shows a line having a flange with single O-ring gasket inside the containment building as well as in the annulus between the containment building and shield building. Figure 6.2.4-23, "Ice Blowing and Negative Return Lines – Blind Flange Details", shows a single flange with double square cross section gaskets located in the annulus. Clarify the configuration of the ice blowing and negative return penetration barriers.
3. Table 6.2.4-1, "Watts Bar Nuclear Plant Containment Penetrations and Barriers", has several inconsistencies for which the staff needs clarification, including:
 - a) Table 6.2.4-1 contains numerous abbreviated notations for information as well as a notes column but does not appear to have a legend or notes table to support understanding of the data presented.
 - b) Entry for penetration X-6 lists the valve numbers as 50 and 51 while the details sketch shows valves 51 and 58.
 - c) Entry for penetrations X-23, X-28, X-85A, X-86A, X-86B, X-86C, X-92C, X-105, and X-106 show them to be spare but also shows both App J Type C as well as Type A tests being applicable. Table 6.2.6-2, "Containment Isolation Valves Subjected to Type C Testing", lists isolation valves for penetrations X-23, X-28, X-85A, X-86A, X-86B, X-86C, X-92A, X-92B, X-92C, X-105, and X-106.
 - d) Entry for penetration X-25C shows both test connection valves (in series) 42B/1 and 42B/1 as being closed for ILRT testing but only 42B/1 as being tested by the ILRT.
 - e) Entries for instrumentation penetrations (X-25C, X-26C, X-85C, X-86D, X-97) list the test connection valves while the entries for other penetrations do not specifically list valve data for test connection valves.

- f) Entries for fire protection system penetrations X-31 and X-78 show a process fluid code of “A” and normal position codes of “O” for the inboard and outboard isolation valves.
 - g) Entry for penetration X-107 shows no applicable App J test for relief valve 74-505 when the other inboard boundary valves are shown as tested by App J Type A test.
 - h) Entry for penetration X-118 indicates there are two blind flanges, one in the containment building and one in the shield building, although the detail sketch only shows the flange in the shield building. The detail listing also does not show a normal, shutdown, post-accident, or ILRT position for the flange in the shield building.
 - i) Entry for penetration X-54 lists a blank flange in both the containment building and in the shield building but the detail sketch shows only the flange in the shield building and Figure 6.2.4-15, “Type XVII, Incore Instrumentation Thimble Assembly Renewal Line”, shows only one flange in the shield building. The valve (barrier) data listing for one flange indicates that it is closed post-accident but that the App J ILRT position is “O”.
 - j) Entry for penetration X-39A shows isolation valves 63-64 and 63-868 while Table 6.2.6-2 shows isolation valves 63-64 and 77-868.
 - k) Entry for penetration X-39B shows isolation valves 68-305 and 68-849 while Table 6.2.6-2 shows isolation valves 68-305 and 77-849.
 - l) Entry for penetration X-41 details sketch shows relief valve 1-77-2875.
 - m) Entry for penetration X-47A shows isolation valves 61-191, 61-192, and 61-533 while Table 6.2.6-2 lists valves 61-191, 61-192, and 61-788.
 - n) Entry for penetration X-47B shows isolation valves 61-193, 61-194, and 61-680 while Table 6.2.6-2 lists valves 61-193, 61-194, and 61-935.
 - o) Entry for penetration X-76 shows isolation valves 33-713 and 33-714 while Table 6.2.6-2 lists isolation valves 33-732 and 33-733.
 - p) Entry for penetration X-97 shows no isolation valves and only test connection valves 30-133B/1 and 30-133B/2 while Table 6.2.6-2 lists isolation valves 30-134 and 30-135.
 - q) Entry for penetration 26C lists in-line valves 30-43A and 30-310A along with test connection valves 30-43C1, 30-43C2, 30-310C1, and 30-310C2 while Table 6.2.6, “Valves Exempted From Type C Leak Testing”, lists only the test connection valves. Table 6.2.4-1 also shows valves 30-43A and 30-310A being open post-accident and for ILRT but also being tested by the ILRT.
4. Section 6.2.4.1, “Design Bases”, item (5) states that “Relief valves may be used as isolation valves, provided the relief valve setpoint is greater than 1.5 times the containment design internal pressure.” The information in Table 6.2.4-1 shows all relief valves used as containment isolation valves, other than those on the four main steam lines, to be discharging to the primary containment, whether or not they are installed inside or outside of containment. Confirm if this is correct.
5. Section 6.2.6.2, “Containment Penetration Leakage Rate Test”, description of exemptions (I)(2), (I)(3), and (I)(5) state, as does Note 3 to Table 6.2.6-3, that water testing of water sealed valves is “as specified in 10 CFR 50, Appendix J.” This section also indicates that Appendix J Option B is to be implemented as specified in the plant Technical Specifications. Appendix J Option B does not specifically describe water testing as does Option A. Appendix J Option B requires the plant technical specifications will include, by general reference, the regulatory guide or other

implementation document used to develop a performance-based leakage-testing program. Clarify the source of the requirement regarding water testing of valves.

6. Section 6.2.6.2, "Containment Penetration Leakage Rate Test", item (1), "Method 1, Pressure Decay" indicates that either air or nitrogen can be used as the test medium and that the leakage rate be calculated using the specified formula. The formula does not appear to provide a conversion for the results when using nitrogen. Clarify if test results are converted to equivalent air leakage when using nitrogen. This section also uses the abbreviation " P_{ac} " while " P_a " is used elsewhere. " P_a " is defined in Appendix J while " P_{ac} " is not. Describe how both abbreviations are being used.
7. Section 6.2.6.2, "Containment Penetration Leakage Rate Test", item (1), "Method 3, Waterflow", has been deleted but the paragraph preceding the Method 1 description still refers to water as being a pressurizing medium. Clarify whether or not water could be used as the pressurizing medium.
8. Table 6.2.6-2, "Containment Isolation Valves Subjected to Type C Testing", has several inconsistencies for which the staff needs clarification, including:
 - a) Penetration X-52 entry lists valves 1-70-100 and 1-70-790.
 - b) Penetration X-56A entry lists valves 1-67-113 and 1-67-1054D.
 - c) Penetration X-65 entry lists valves 31-31-309, 31-308, and 31-3407 while Table 6.2.4-1 details sketch shows valves 31-309, 31C-308, and 31-3407.
 - d) Penetration X-66 entry lists valves 31-326, 31-327, and 31-3392 while Table 6.2.4-1 detail sketch shows valves 31-326, 31C-327, and 31-3392.
 - e) Penetration X67 entry lists valves 31-330, 31-329, and 31-3378 while Table 6.2.4-1 detail sketch shows valves 31-330, 31C-329, and 31-3378.
9. Table 6.2.6-3, "Valves Exempted From Type C Testing", has two inconsistencies, for which the staff needs clarification:
 - a) Penetration X-19A lists valves 63-072 and 72-044 while Table 6.2.4-1 shows valves 63-72 and 72-44.
 - b) Penetration X-19B lists valves 63-073 and 72-045 while Table 6.2.4-1 shows valves 63-73 and 72-45.

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